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POSTTREATMENT EVALUATION - JEFFREY PINE BEETLE SUPPRESSION PROJECT, SOUTH SHORE RECREATION COMPLEX LAKE TAHOE BASIN MANAGEMENT UNIT

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ABSTRACT

A posttreatment evaluation was conducted over the 165 acres in the South Shore Recreation Complex treated in the winter-spring of 1983 to reduce Jeffrey pine beetle-related mortality. A total of 330 currently infested Jeffrey pine were treated (cut, bark peeled, bucked) and subsequent examinations of the treated material did not reveal any 1982-83 generation brood survival. To date, 145 Jeffrey pine have been successfully attacked in the treatment area by the 1983-84 bark beetle generation, a 56% reduction in mortality over the previous year. Short-term treatment efficacy and efficacy within the context of future management plans for the treatment area are discussed.

INTRODUCTION

Since the early 1970's, the South Shore Recreation Complex has periodically experienced unacceptable levels of Jeffrey pine beetle (Dendroctonous jeffreyi)- related mortality. Following two Biological Evaluations (ref. 3430, October 29, 1980 and January 14, 1983) conducted by the Forest Pest Management Staff and additional observations (ref. 3400 letter to Forest Supervisor, October 5, 1982), the Lake Tahoe Basin Management Unit (LTBMU) prepared an Environmental Assessment to determine the appropriate management action. The decision was to undertake a direct suppression action against the Jeffrey pine beetle in specific high-use areas in the winter-spring of 1983. This report documents the results of the suppression effort.

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RESULTS

A total of 330 Jeffrey pine infested with the Jeffrey pine beetle were treated (cut, bark peeled, bucked) between February 7 and May 18, 1983 over 165 acres in the Tallac Historic Estates, Kiva Picnic Area and Fallen Leaf Campground areas of the South Shore Recreation Complex, Lake Tahoe Basin Management Unit (LTBMU). The treatment was carried out by Nevada Department of Corrections crews under the supervision of the Nevada Division of Forestry; LTBMU personnel monitored operations on virtually a daily basis. Approximately 70 Jeffrey pine mortality groups were identified averaging between 4 and 5 trees/group and ranging from single trees to 21 trees/group. The average basal area associated with these mortality centers was 375 sq. ft./ac. with a range of 160-720 sq. ft./ac. The treated trees averaged about 80 feet in height (20 ft.-171 ft.) and 16-17 inches DBH (8 in.-60 in.). Cost of the treatment was $11,179.75 ($33.89/tree or $67.76/acre), which was well under the $16,327.00 treatment cost estimate. The main difficulties encountered during the treatment were less than optimal working conditions due to snow cover and periodic adverse weather conditions as well as difficulty in peeling the bark from the bole.

Examinations of felled trees and peeled bark by FPM and the LTBMU at various times during the project did not find any Jeffrey pine beetle brood survival. As expected, mortality probably resulted from a combination of exposure and predation. During the project, groups of between 10-25 mountain chickadees were frequently observed working over peeled logs and bark, often within minutes of peeling, presumably feeding on exposed Jeffrey pine beetle brood and other invertebrates. All stumps were treated with borax for prevention of Fomes annosus soon after the infested trees were cut. The trees cut and peeled during the project were utilized via a fuelwood permit sale to local residents; a total of 150 cords were sold at $20/cord.

To date, 145 Jeffrey pine have been successfully attacked by the 1983-84 Jeffrey pine beetle generation in the treated area. The first attacks were detected in late July. The majority of the newly attacked trees were identified from mid-August to mid-September indicating that the main adult flight occurred between early August and mid-September. The 145 trees attacked by the 1983-84 generation is a 56% reduction from the 330 trees attacked by the 1982-83 generation. Approximately 115 infested trees were cut and peeled this fall; the remaining trees and any additional infested trees found will be treated in the spring of 1984 as conditions allow.

DISCUSSION

Evaluation of the 1982-83 suppression effort should recognize that it is considered to be the initial step in a series of management actions intended primarily to reduce mortality in LTBMU recreation areas to acceptable levels within the context of management objectives. Additional actions currently planned for the treatment area include continued monitoring to determine the needed for subsequent Jeffrey pine beetle suppression, dwarf mistletoe control, and the development and

implementation of a vegetation management plan. The immediate objective of the suppression project was to reduce Jeffrey pine beetle-related mortality in the treatment area as much as possible until silvicultural prescriptions, developed as part of the vegetation management plan, can be implemented beginning in FY 84. Application of the prescriptions should reduce the factors, primarily overstocking and to a lesser extent, annosus root disease, Elytroderma and dwarf mistletoe, that predispose the trees to bark beetle attack and thus significantly reduce mortality.

At the same time, until the prescriptions are applied, there is opportunity to evaluate the suppression project as an independent action; that is, to evaluate the effectiveness of direct Jeffrey pine beetle suppression alone in reducing tree mortality to acceptable levels in a specific area. In this particular case, the objective is to protect a set of trees that, because of their age, size and/or location, have very high value. There is a tendency to define acceptable levels of mortality for these particular trees at as close to zero as possible. It is likely that enough of the 145 trees attacked in the treated area by the 1983-84 bark beetle generation were of sufficiently high value that the level of mortality would still be viewed as unacceptable. On the other hand, if, based on 1982-83 mortality levels, it is assumed that approximately 185 trees were prevented from dying by the suppression action, the benefits or value(s) saved, however measured, are almost certainly greater than the cost of the treatment.

In this particular case, except for the season-related difficulties noted above, conditions that could potentially have a negative affect on project efficacy were minimal. The beetle has a one-year life cycle (rather than multiple generations/year) and attacked trees can be readily identified by relatively large pitch tubes and the presence of boring dust. Lake Tahoe Basin Management Unit personnel work in the area almost daily which facilitates the detection and marking of infested trees and monitoring operations. The project area size, topography and access allowed a 100% cruise of the treatment area.

During the posttreatment evaluation, only three trees were found that were infested in 1982-83 and should have been identified,felled and peeled as part of the suppression effort. All three trees were located along the treatment boundary in the Fallen Leaf Campground area and each had a currently infested (1983-84 generation) Jeffrey pine nearby, which lends support to the original observation and rational for the suppression project that emerging beetles tend to attack nearby trees. Thus, 99% of the infested trees in the suppression project area were identified and treated, indicating that the mortality that has occurred in the treated area after the treatment was not due to technical or logistical problems in treatment application. It also imples that the 1983-84 generation beetles that attacked the 145 trees in the summer/fall of 1983 originated outside the treatment area. The attacks were not concentrated near the edge of the treatment area. Most of the mortality is

occurring in groups of from 6-16 trees in areas well inside the treatment boundaries and frequently in or near spots where mortality has consistently occurred over the last three years. This suggests that trees in these locations have a relatively high degree of susceptiblity to attack and tends to substantiate the need for vegetation management to mitigate predisposing conditions to the extent possible. In the case of the Estates area, mechanical damage to trees from trail, road, parking lot and drainage ditch construction has almost certainly been a contributing factor.